ECS SRA UPDATE

2019 VERSION

INTERVIEW WITH PATRICK COGEZ *by* **CHRIS HORGAN**

The Electronics Components and Systems Strategic Research Agenda forms the basis for the calls for projects of Research and Innovation Programmes such as ECSEL and EUREKA/ PENTA and EURIPIDES². Almost a year on from its first publication, the ECS SRA has been updated. As a living document, this SRA is responsive and alert to the often rapidly changing environment in which it provides strategic guidelines. Patrick Cogez, Technical Programme Manager at AENEAS, one of the three partner associations (with ARTEMIS-IA and EPoSS) of ECSEL, is Chair of the ECS SRA and responsible for coordinating the production of this document. He took a little time out in Lisbon to outline some of the main changes of this latest version that was presented during the EFECS 2018 event.

CONSTANT EVOLUTION IN HIGHLY DYNAMIC LANDSCAPE

"Our mission as industry associations is to ensure that Europe can maintain and strengthen its leadership in the relevant fields in terms of both current and foreseeable technology capabilities, so the goal of the ECS SRA is to identify the key focal points for pertinent research and innovation in Europe. But as we know," Patrick explains, "our industry is highly dynamic. Technology is changing rapidly and becoming more advanced year by year, and new applications are emerging at an ever increasing pace. This has to be reflected in an SRA document that is able to evolve constantly through annual reviews. We plan a major update every three years. Our three associations have the essential responsibility to provide guidance to all ECS stakeholders so that they can keep abreast of new emerging technologies, potential game-changers and the evolving long-term vision. Furthermore, in preparing such an SRA, we can scout for new participants and communities. The more people we can involve, the more comprehensive our reach can be and the more impact we can have."

ARTIFICIAL INTELLIGENCE

This is the first minor update the ECS SRA has undergone. It represents a range of changes to the chapters in the 2018 edition, particularly in respect of the timelines that have been adjusted to cover the period 2019-2028. Furthermore, the importance of the ongoing and future breakthroughs of Artificial Intelligence, the technology developments they require and their impact across all application domains are evident throughout the document. In addition, an entirely new chapter has been added: Chapter 11, Long Term Vision.

LONG TERM VISION

"There was clear need to have a separate chapter on the long-term vision of the SRA," Patrick says, "to give more space and scope to survey the emerging technologies that have a significant potential impact on the European ECS landscape over the next ten years and beyond. We have avoided trying to make specific predictions – there is always the possibility that these can be disputed. So what we have done with this chapter is to highlight the challenges that need to be solved in the light of likely long-term trends such as fossil fuel availability, requirements for personalised medicine or zero-emission environmental norms. We then go on to identify which technologies or applications could be the most promising, or still need to be developed, to provide the solutions to the expected societal needs that have to be met. In particular, Chapter 11 focuses on the expected future requirements that the predicted evolution of current technologies will not be able to fulfil."

By highlighting key research and innovation topics required to maintain the competitiveness of the European ECS industry in the long run, this Long-Term Vision chapter is an essential element of the ECS SRA mission to generate growth, create value, jobs and prosperity, and safeguard Europe's competitiveness and sovereignty. For a brief summary of the other main changes and updates. On the next page a brief summary of the other main changes and updates →

THE MAIN CHANGES IN THE ECS SRA IN BRIEF:

0. **Introductory and Overview Chapter**
   The section on new technological paradigms was reshuffled to bring the advent of Artificial Intelligence and data analytics more prominently among the game changers while the long-term vision section has been replaced by an introduction to the new Long-Term Vision chapter.
1. **Transport and Smart Mobility**
   The chapter has been expanded to more explicitly include all transportation modes with maritime transport covered more extensively, and the railroad and multimodal transportation challenges addressed in more detail.
2. **Health and Wellbeing**
   The text has been aligned with the ECSEL Lighthouse HEALTH.E, resulting in minor updates.
3. **Energy**
   Addition of sub-chapter: Digitalisation & Energy along with Artificial Intelligence/Machine Learning approaches.
4. **Digital Industry**
   Given the vast economic scale of agricultural industry and current deployment of IoT devices for precision farming, digital farming has been included in chapter 4.
5. **Digital Life**
   The only change is a minor update of the timeframe diagrams.
6. Systems and Components: Architecture, Design and Integration
   The complete text of the chapter has been streamlined, repetitions eliminated and passages with similar meaning combined, resulting in a much more concise version without loss of content. Important topics have been emphasised/extended (e.g. AI and Software) and high priority areas have been revised.
7. **Connectivity and Interoperability**
   The only change is a minor update of the timeframe diagrams.
8. **Safety, Security and Reliability**
   Additions include disruptive threats linked to cloud, big data and quantum cryptography, new patterns of processor architecture and new priorities around architecture & design related to security along with the impact of Artificial Intelligence.
9. **Computing and Storage**
   Challenges related to energy consumption are also discussed at system and infrastructure level, Artificial intelligence developments, software challenges for growing complexity plus the need for methodologies and tools for application and system design. Open Hardware initiatives are addressed in this new edition of the SRA
10. **Process Technology, Equipment, Materials and Manufacturing for Electronic Components & Systems**
    The title has been reworded, the first paragraph of the executive summary adapted to strengthen link to applications, most importantly Artificial Intelligence, and the impact section revised to improve readability, with links to other chapters like Digital Industry and Computing & Storage more apparent. The text regarding the major challenges has undergone significant revisions.
11. **Long-Term Vision**
    New chapter.